HP808D 8 in 1 MPEG4 AVC/H.264 HD Encoder

User's Manual

CATCAST TECHNOLOGY CO., LTD. (CHENGDU)

DIRECTORY

Chapter 1 Product Introduction

1.1 Outline

The CATCAST HP808D 8-in-1 MPEG-4 AVC/H.264 HD encoder is our newest professional HD audio & video encoding and multiplexing device with powerful functionality. It is equipped with 8 HDMI (or SDI) channels input supporting MPEG-4 AVC/H.264 High Profile code format & main Profile code format, and also 1 ASI input for re-mux. It can multiplex the ASI input TS and the 8 encoded SPTS to generate a MPTS output with the inserted PSI/SI information. In conclusion, its high integration and cost-effective design make this device widely used in variety of digital distribution systems such as CATV digital head-end, satellite and terrestrial digital TV, etc.

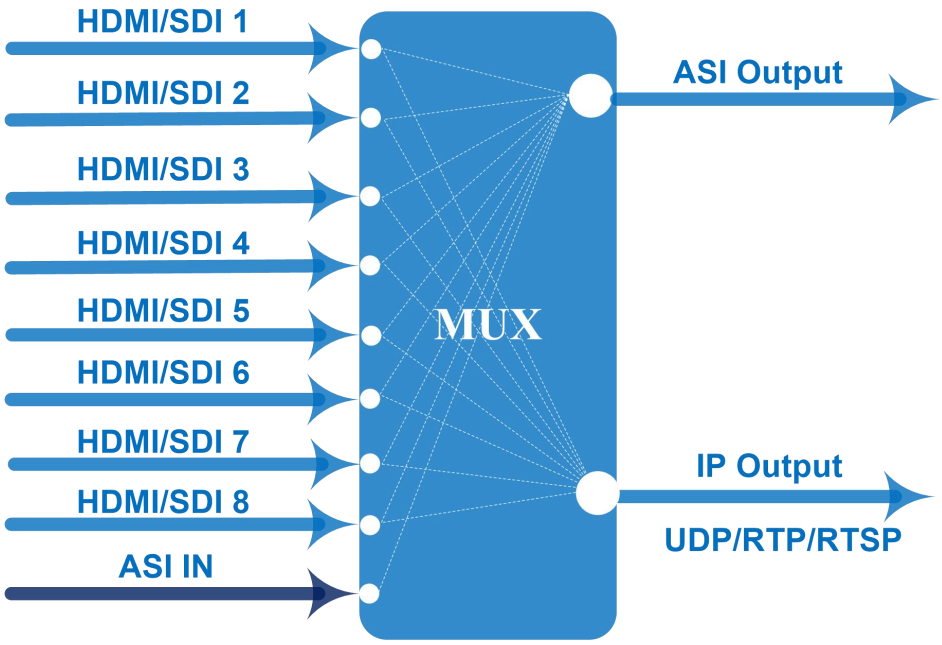
1.2 Main Features

- **Support 8 HDMI/SDI channels input & 1 ASI Input**
- **Support MPEG-4 H.264/AVC video encoding**
- **Support 720P, 1080I, 1080P HD video format, and HD (1080i/720p) to SD (576p/480p) downscale conversion**
- **Support MPEG1 Layer 2 (HE-AAC (V2), LC -AAC optional) audio encoding; AC3 Passthrough (For HDMI)**
- **Support ASI output as mirror of MPTS or encoder channel 1~8**
- **Support IP Output MPTS and 8 SPTS over UDP and RTP/RTSP**
- **Support audio gain control(For HDMI)**
- **Support PSI/SI editing and inserting**
- **Support VBR/CBR video bitrate mode**
- **Support IP null packet filter**
- **Real-time output bit-rate monitoring**
- **Update device through NMS port**
- **Support LCD / keyboard operating, and network management (Web)**

1.3 Specifications

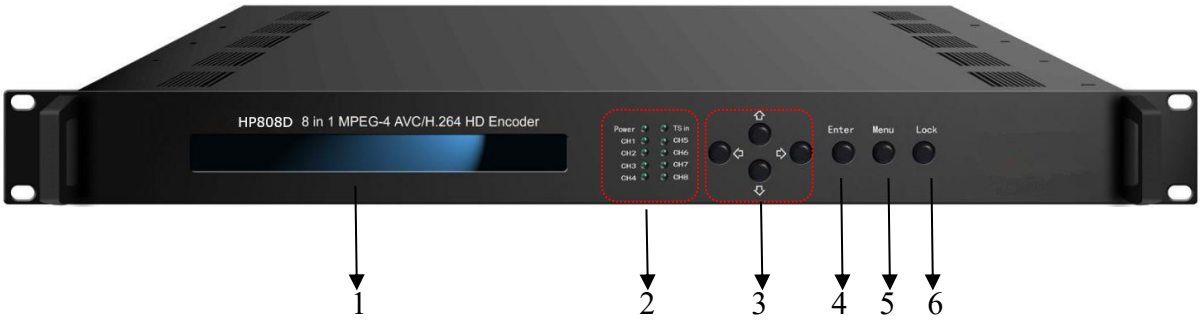
Input	8×HDMI (or 8×SDI) inputs	
	1 ASI input, BNC interface	
Video	Encoding	MPEG-4 AVC/H.264
	Resolution	1920×1080_60P, 1920×1080_50P
		1920×1080_60i, 1920×1080_50i
		1280×720_60P, 1280×720 _50P
		720×576_50i, 720×480_60i
	Resolution Downscale	1080i/720p to 576p/480p
	Bit-rate	0.8Mbps~19Mbps (each channel)
	Rate Control	CBR/VBR
	GOP Structure	IBBP
	Advanced Pretreatment	De-interlacing, Noise Reduction, Sharpening
Audio	Encoding	MPEG-1 Layer 2 (HE-AAC V2, LC- AAC Option); AC3 passthrough (for HDMI)
	Sampling rate	48KHz
	Resolution	24-bit
	Bit-rate	64Kbps,96Kbps,112Kbps,128Kbps,160Kbps,192Kbps ,224Kbps,256Kbps,320 Kbps,384Kbps each channel
	Audio Gain	0-400
Multiplexing	1 ASI input multiplexed with local 8 channels of TS	
Stream output	2*ASI output, BNC interface	
	MPTS and 8 SPTS over UDP and RTP/RTSP., 1000 Base-T Ethernet interface (unicast / multicast);	
System function	LCD/keyboard operating, net manager (Web)	
	Chinese-English control interface	
	Ethernet software & hardware upgrade	
Miscellaneous	Dimension (W× L× H)	440mm×410mm×44.5mm
	Temperature	0~45℃(work), -20~80℃（Storage）
	Power	AC 100V-220V±10%, 50/60Hz

1.4 Principle Chart



1.5 Appearance and Illustration

Front Panel Illustration:



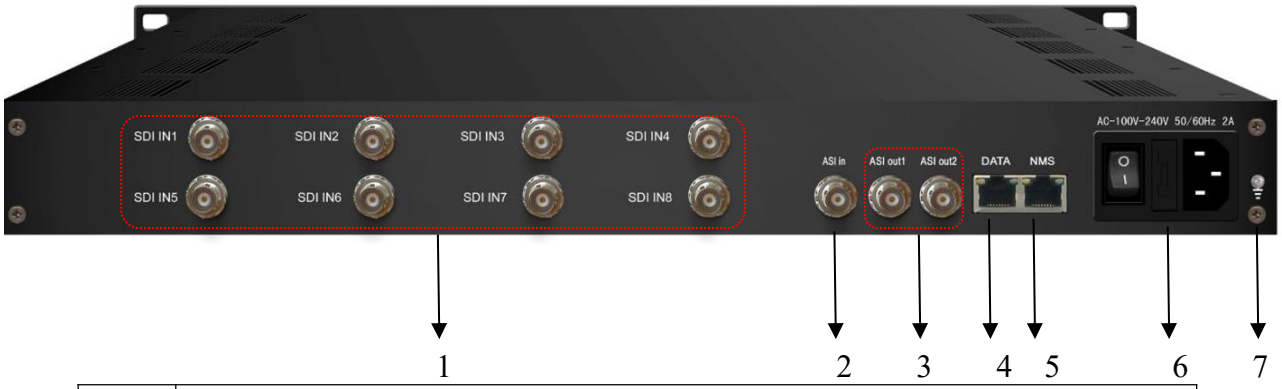
Indicate area: All indicators will light on when the device is on the current working state.

1	LCD Screen	
2	Indicators	Power Indicator
		TS In: Input Lock Indicator
		CH1-CH8: When the program has been multiplexed, the indicator will be on.
3	UP/ DOWN, LEFT/RIGHT Keys	
4	Enter Key	

5	Menu Key
6	Lock Key

Rear Panel Illustration (HDMI):

Rear Panel Illustration (SDI):



1	8 * HDMI/SDI Input Ports
2	ASI Input Port
3	2 * ASI Output Ports
4	Data Port (for IP Signal Output)
5	NMS (Network Management Port)
6	Power Switch and socket
7	Grounding Pole

Chapter 2 Installation Guide

2.1 Acquisition Check

When users open the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

- HP808D 8 in 1 MPEG-4 AVC/H.264 HD Encoder
- User's Manual
- HDMI/SDI Cable
- ASI Cable
- Power Cord

If any item is missing or mismatching with the list above, please contact local dealer.

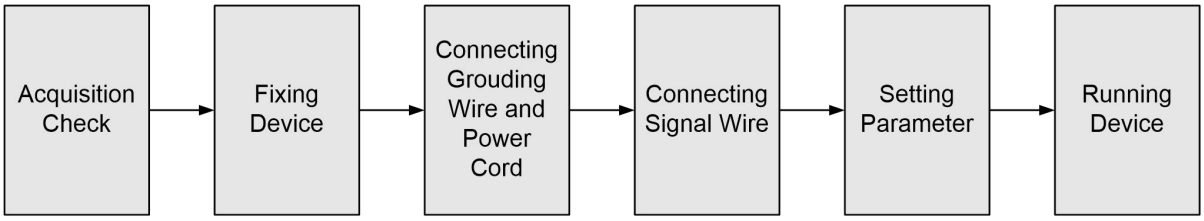
2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing Encoder
- Connecting signal cables
- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart is Illustrated as following：



2.2.2 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1X10^{7}$~$1X10^{10}\Omega$， Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/㎡)
Environment Temperature	5~40℃(sustainable)，0~45℃(short time)， installing air-conditioning is recommended
Relative Temperature	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 220V 50Hz. Please carefully check before running.

2.2.3 Grounding Requirement

- All function modules' good grounding designs are the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Coaxial cable's outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than $25mm^2$.

2.2.4 Frame Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm^2.

2.2.5 Device Grounding

Connecting the device's grounding rod to frame's grounding pole with copper wire.

2.3 Wire's Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside ,whose order goes like this, power switch is on the left ,power supply socket is on the right and the fuse is just between them.

- Connecting Power Cord

  User can insert one end into power supply socket, while insert the other end to AC power.

- Connecting Grounding Wire

  When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω.

☞Caution:

Before connecting power cord to HP808D 8 in 1 MPEG-4 AVC/H.264 HD Encoder, user should set the power switch to "OFF".

2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable. The details are as follows:

2.4.1 HDMI input cable illustration:

2.4.2 SDI input cable illustration:

2.4.3 ASI output cable illustration:

2.4.4 Network Cable illustration (CAT5):

2.4.5 HDMI input interface connection

User can firstly find the HDMI interface on the device according to the connector mark described on the rear panel illustration, and then connect the HDMI cable (in the accessories). One end is connected to the head-end equipment while the other end to the encoder's HDMI input port. The encoder's HDMI input port (HDMI1…HDMI8) and its connection are illustrated as follows:

2.4.6 SDI input interface connection

User can firstly find the SDI interface on the device according to the connector mark described on the rear panel illustration, and then connect the SDI cable (in the accessories). One end is connected to the head-end equipment while the other end to the encoder's SDI input port. The encoder's SDI input port (SDI1…SDI8) and its connection are illustrated as follows:

2.4.7 ASI output interface connection

User can firstly find the ASI output interface on the device according to the connector mark described on the rear panel illustration, and then connect the ASI cable (in the accessories). One end is connected to the encoder's ASI out connector (ASI1, ASI2) while the other end to the TS stream multiplexer or modulator's ASI input port. The encoder's ASI output interface and its connection are illustrated as follow:

2.4.8 IP Output Interface connection

Users can firstly find the DATA interface on the device according to the connector mark described on the rear panel illustration, and then connect the network (CAT5). One end of the network cable is connected to the encoder's DATA output connector, while the other end to the TS stream multiplexer IP input port or other device which can input IP signal. The encoder's DATA connection is illustrated as follows:

2.4.9 NMS Connection

Users can firstly find the NMS interface on the device according to the connector mark described on the rear panel illustration, and then connect the network (CAT5). One end of the network cable is connected to the encoder's NMS connecter, while the other end to the computer or the PC. The encoder's NMS connection is illustrated as follows:

Chapter 3 Operation

In addition to applying the front buttons & LCD to set configuration, users can also control and set the configuration with PC (Personal Computer) by connecting the device to web NMS Port. Most parameters in the web NMS are the counterpart with that in the LCD.

Keyboard Function Description:

ENTER: Activating the parameters which need modifications, or confirming the change after modification.

MENU: To cancel presently entered value, resume previous setting and return to previous menu.

LEFT/RIGHT: To move the "►" to choose or set the parameters.

UP/DOWN: To modify activated parameter or page up/down when parameter is inactivated.

LOCK: To Lock the screen / cancel the lock state. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.

At the "Factory Configuration" page, user can press "**ENTER**" key to restore the factory default configuration.

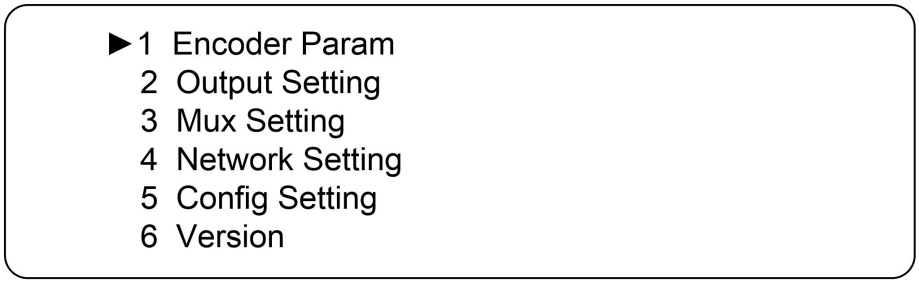
3.1 Initializing

After powering on the device，it will take a few seconds to initialize the system, and then the LCD will show the device name and output real-time bit-rate in the first row, while the 8 channels' respective input video resolution, frame rate and real-time encoding bit-rate in the second row in turn. It shows as below:

```
   8 in 1 Encoder                          65.958 Mbps
1 480I 60      08.235M                  2 480I 60  08.241M
```

3.2 General Setting

By pressing LOCK key, users can enter in the main menu and set the input and output parameters in the following editing interfaces, the LCD will display the following pages:



The option with "►" is the current selection, users can press the ENTER key to enter the specified submenu to modify the device parameter.

3.2.1 Encoder Param

Under this menu, users can enter the corresponding encoding channel to set the relevant audio and video input parameters, and select programs to multiplex. The LCD will display 8 submenus which from Encoding Channel 1 to Encoding Channel 8. The setting principle of Encoding Channel 1-8 is the same, so here this manual just takes one channel as the example to explain. After pressing the enter key, the LCD will display the following pages:

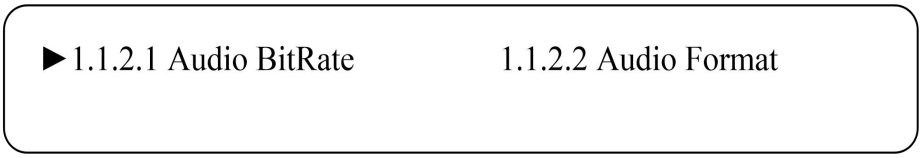
After users enter the submenu, the interface will turn into the following pages, and then users can enter the corresponding interface to modify the parameters.

3.2.1.1 Video Param

- **Bitrate**

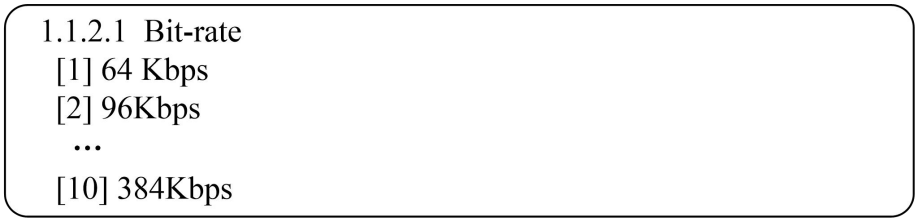
By press "Enter" key, user can modify relevant parameter of encoding rate (adjustable range: 0.8M~19M), the specific steps are displayed as follows:

3.2.1.2 Audio Param



- **Audio Bit Rate**

User can set the input audio bit-rate by pressing the enter key to enter the main editing interface. And there are: 64Kbps, 96Kbps, 112Kbps, 128Kbps, 160Kbps, 192Kbps, 224Kbps, 256 Kbps, 320Kbps, and 384Kbps. After the modification, users can press enter key again to take the modification into effect. The LCD will display the following pages:

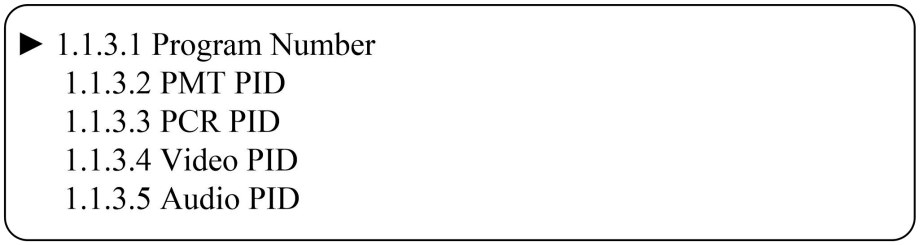


- **Audio Format Setting**

AAC: Advanced Audio Coding

Users can set the input audio format in this interface, and the 2 options are MPEG1 Layer Ⅱ, (AAC, and HE-AAC for option) and AC-3 Passthrough(for HDMI). When users enter the main editing menu, the LCD will display the following page:

3.2.1.3 Prg Info



Under this interface, users can set the corresponding system parameters, after the modification, users can press enter key to take the modification into effect.

- **Program Number Setting**

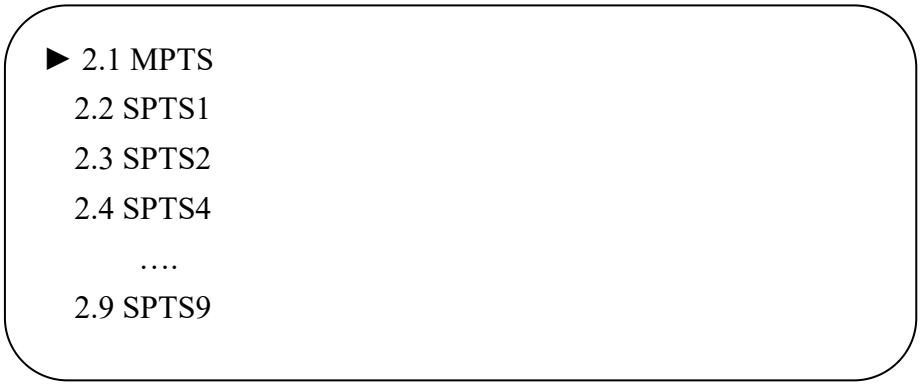
Users can set the program number by pressing ENTER to enter this submenu. The LCD will display as below:

- **PMT/PCR PID/Video/Audio Settings**

Users can set these parameters by pressing ENTER to enter these submenus. The LCD will display the following pages, and the maximum PID number cannot exceed 0x1fff.

3.2.2 Output Setting

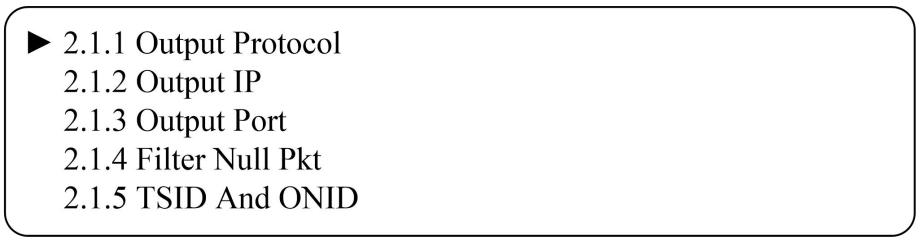
By press the enter key in the main editing interface, use can set the device output parameter. The device will display the following page after users pressing the enter key.



HP808D supports IP output 1 MTPS and 8 SPTS over UDP and RTP/RTSP.

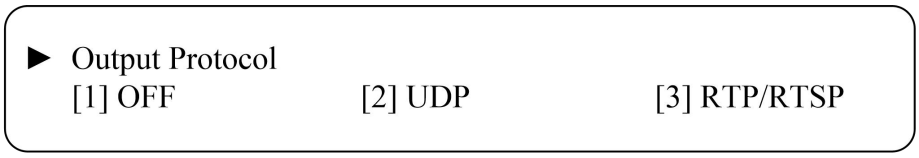
3.2.2.1 MPTS

Users can set the program number by pressing ENTER to enter this submenu. The setting principle is the same for SPTS1-8, so here this manual just takes MPTS as the example to explain. The LCD will display as below:



- **Output Protocol**

In this menu, users can select output protocol by press the ENTER key to select.



- **Output IP**

If users enable the IP output function, then users can set the device IP output address in this interface. After users press the ENTER key, the operating interface will display the following page:

- **IP Out Port**

In this menu, users can set the encoder IP output port number by press the ENTER key to enter the main editing interface.

- **Filter Null Pkt**

Users can choose YES (filter the null packet) or NO (don't filter null packet) to decide whether to filter the null packet or not.

- **TSID And ONID**

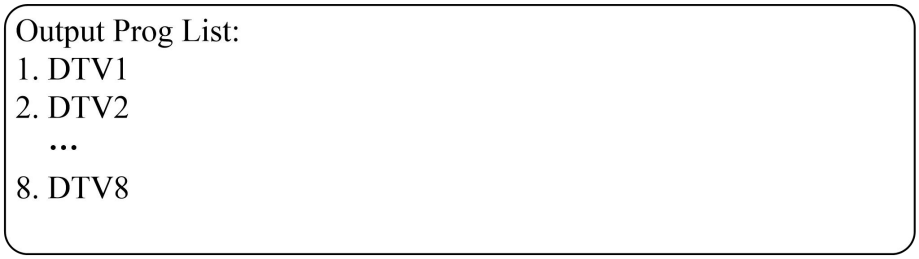
Users can modify the trans stream ID and original network ID in this interface after pressing the ENTER key to enter the main editing page.

3.2.3 Mux Setting

By press the enter key in the main editing interface, use can choose the input programs to multiplexed out from encoding mode and ASI.

3.2.3.1 Encoder Mux

Users can check the HDMI/SDI input programs amount in this interface, and the LCD will display the following page.



3.2.3.2 ASI

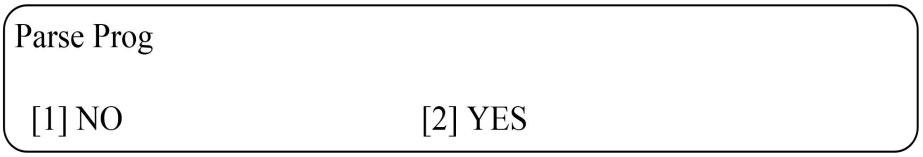
Users can check the ASI input programs amount in this interface, and the LCD will display the following page.

- **Prog List**

If there is no program, the LCD will display the following page.

- **Parse Program**

Under this interface, users can decide whether to parse the programs from ASI input or not to parse.

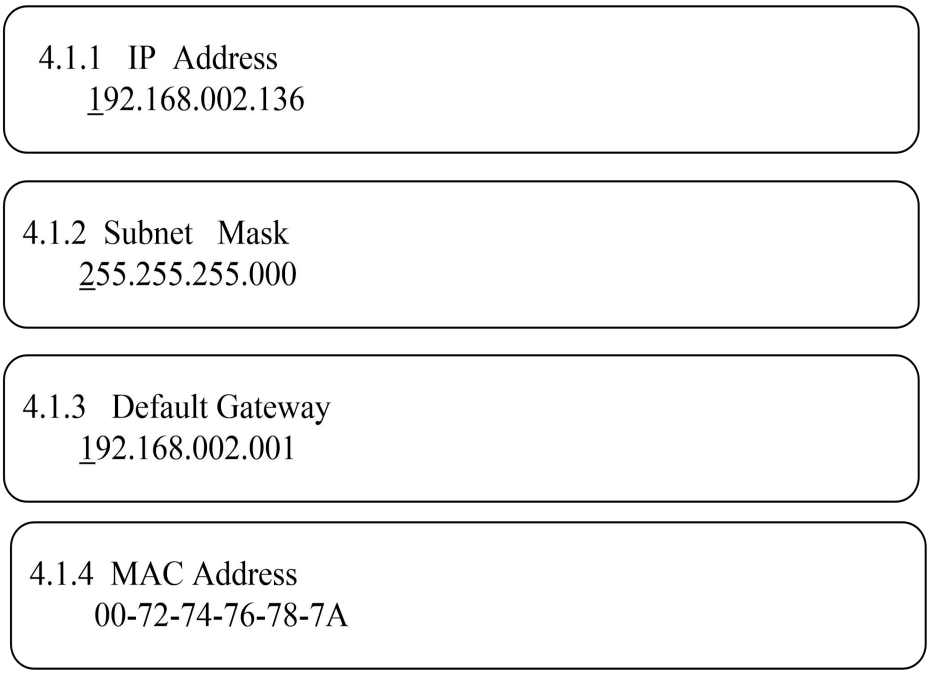


3.2.4 Network Setting

Users can set the network parameters by pressing the enter key, and the LCD will display the following interfaces.

3.2.4.1 NMS Interface

Under the following submenus, there are parameters which can be set manually; user can press "Up/Down" to choose this item. "Enter" to set the parameters. The system displays following pages.

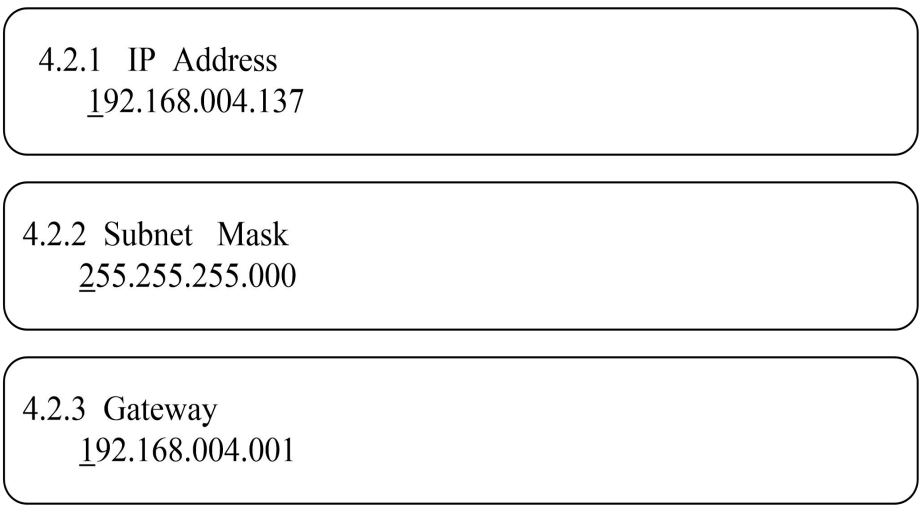


The MAC address is read-only in the keyboard operation interface, so users can just check the physical address under this interface, and the modification must be done in the network updating tools.

NOTE: The MAC address is unique, and cannot be modified. When the MAC address is ffffffffffff, users must modify the address through special software, otherwise, the IP output data will be filter out when the IP stream passes through the router.

3.2.4.2 DATA Interface

User can press "Up/Down" to choose this item. "Enter" to set the parameters. The system displays following pages.



4.1.4 MAC Address
20-72-74-76-78-7A

3.2.5 Config Setting

Users can save the modification by pressing the enter key, and it will display the following interface when user press the enter key.

► 5.1 Save Confguration
5.2 Restore Configration
5.3 Factory Set

Save Confguration

[1] NO [2] YES

Restore Configration

[1] NO [2] YES

Factory Set

[1] NO [2] YES

3.2.6 Version

Users can check the device software version and hardware version, and the LCD will display the following interface when users press the ENTER key.

6.1 SW Version: x.xx
6.2 HW Version: x.x

Chapter 4 WEB NMS Operation

User not only can use front buttons to set configuration, but also can control and set the configuration in computer by connecting the device to web NMS Port. User should ensure that the computer's IP address is different from the encoder's IP address; otherwise, it would cause IP conflict.

4.1 login

The default IP address of this device is 192.168.2.136. (We can modify the IP through the front panel.)

Connect the PC (Personal Computer) and the device with net cable, and use ping command to confirm they are on the same network segment.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the Encoder's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are "admin".) and then click "LOGIN" to start the device setting.

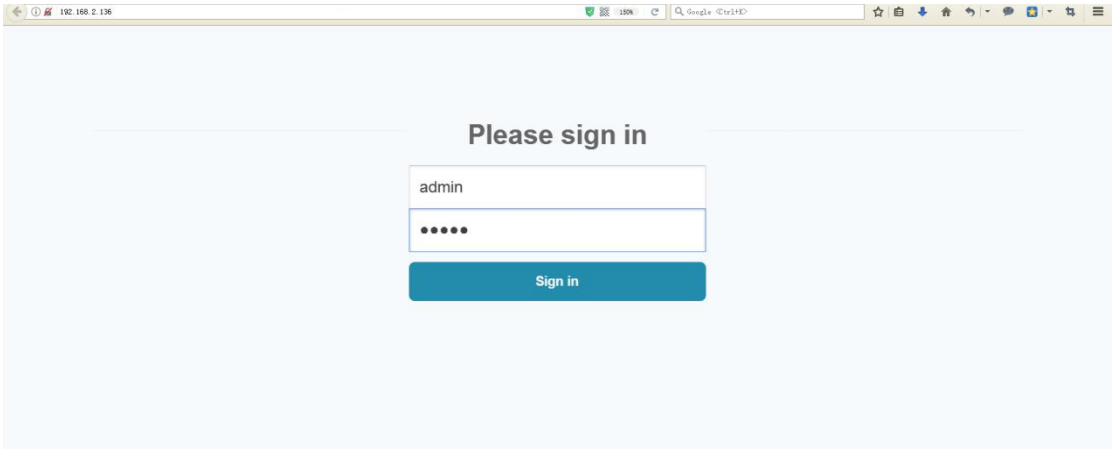


Figure-1

4. 2 Operation

Status:

From the menu on top of the webpage, clicking "Status", it displays the information of the

system, input and output as Figure 2.

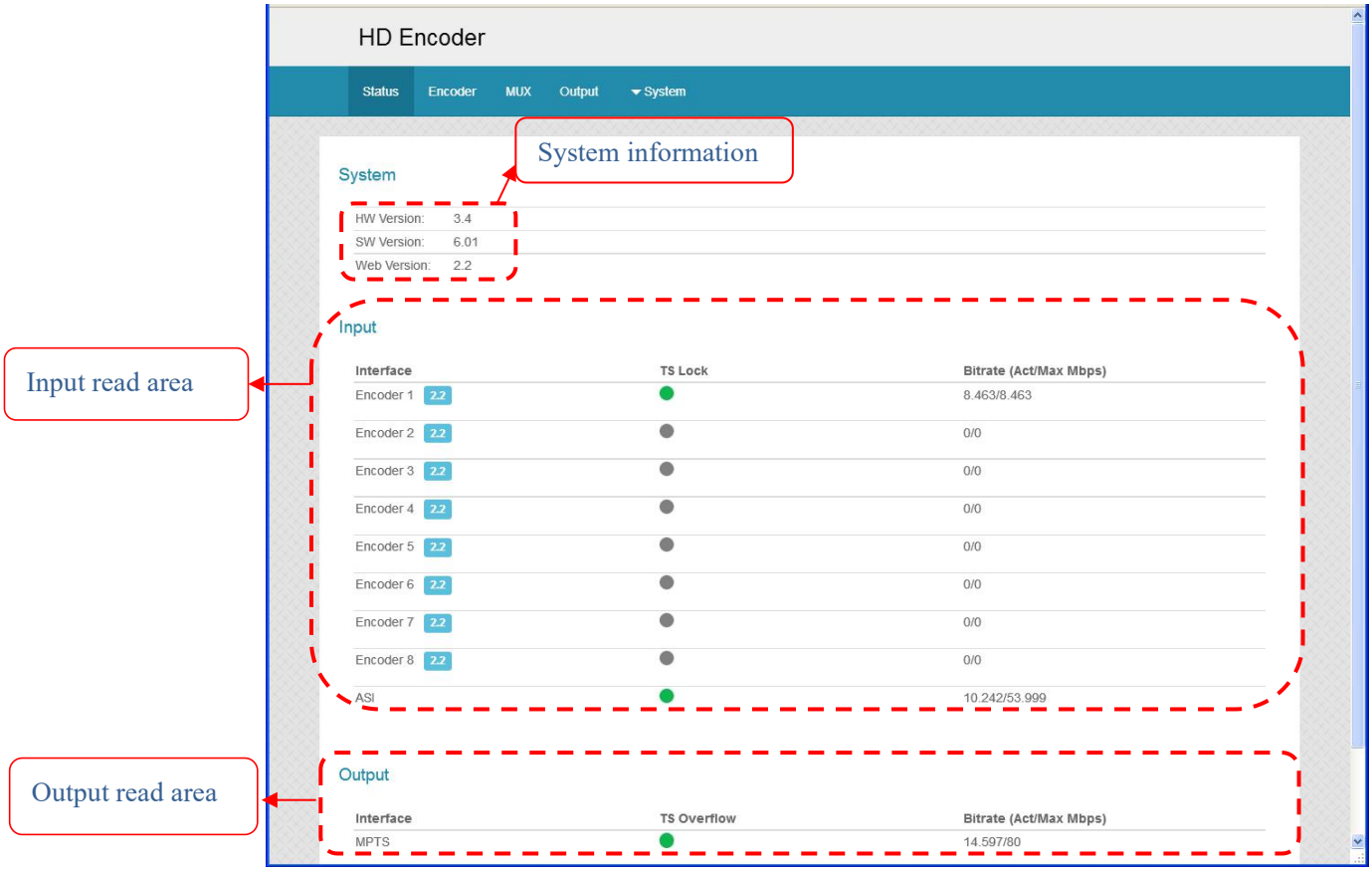


Figure-2

Encoder:

Clicking "Encoder", it displays the interface as Figure-3 where users set video and audio parameters of the 8 encoding channels.

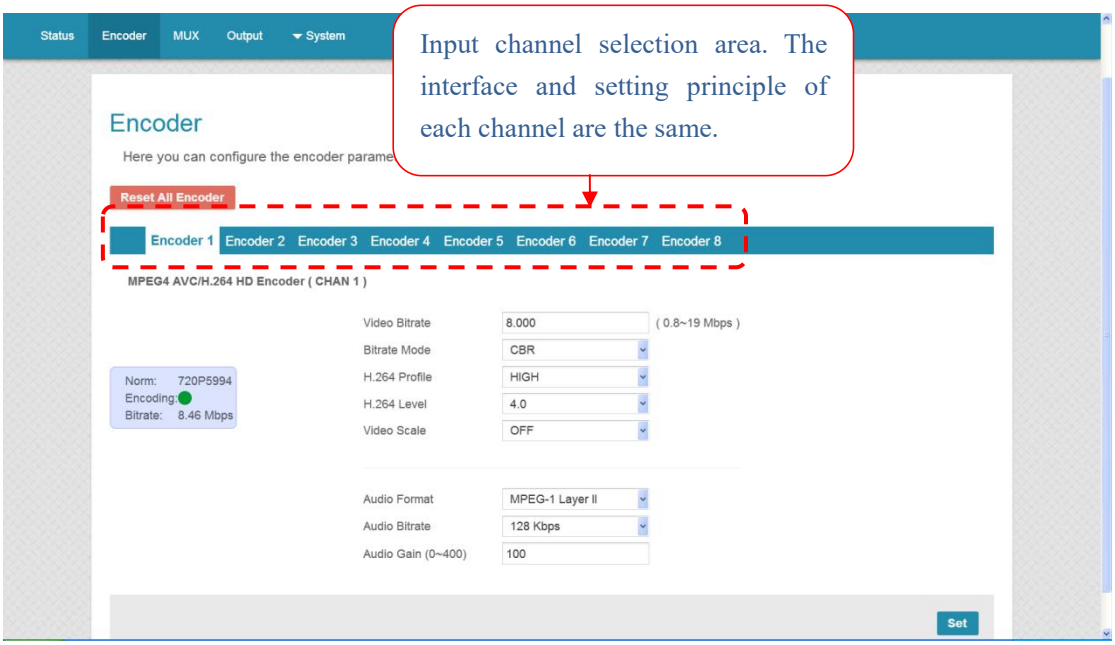


Figure-3

Mux:

Clicking "Mux", it displays the interface as Figure-4 where users can select program(s) from CH1-8 and ASI to multiplex out and modify program info.

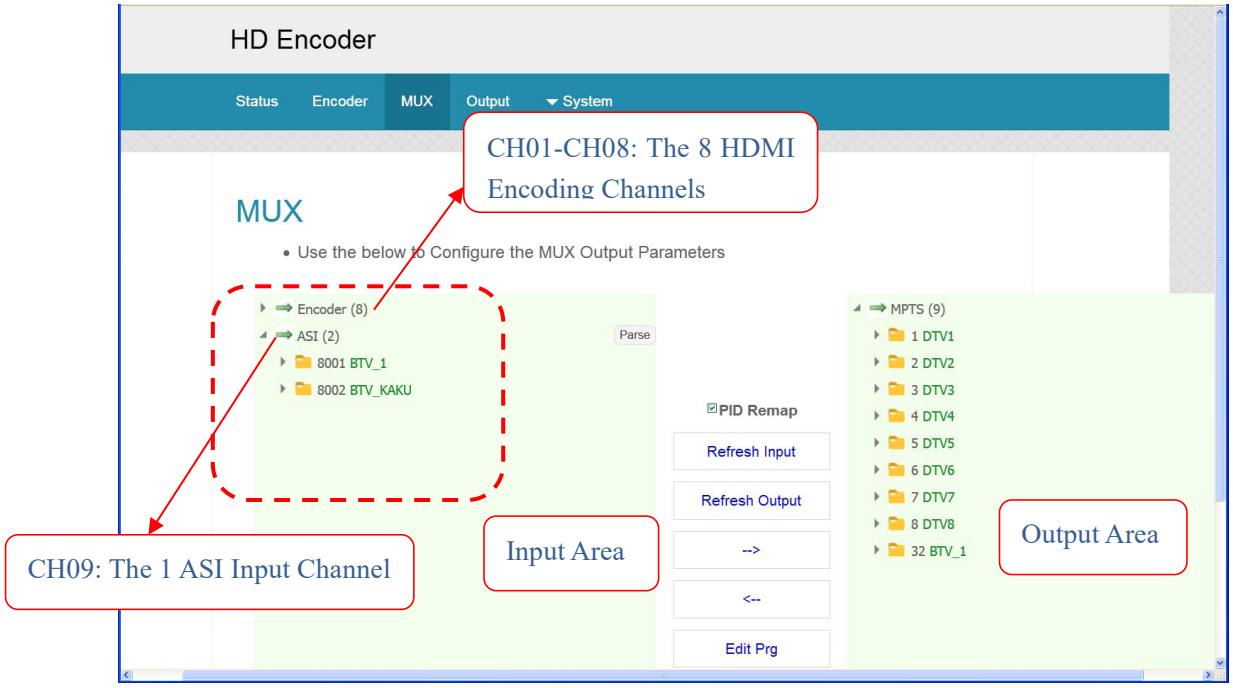


Figure-4

PID Remap : Check this box the set the PID Mapping

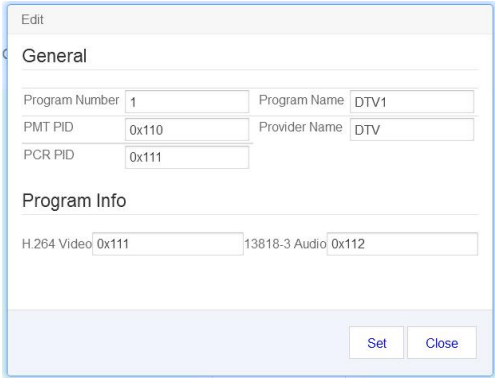
Refresh Input : To refresh the inputting terminal and get the inputting information

Refresh Output : To refresh the outputting terminal and get the outputting information

--> : Multiplex the input programs to the output channels after selecting the target program. The system will automatically allot the program to the relevant output channel.

<-- : Cancel the multiplexed programs.

Edit Prg : To modify the output programs' Program Name, PMT, PCR, video, or audio PID as needed.



Output:

Clicking "Output", it displays the interface where to configure the output parameter.

- **DATA IP Settings:**

Clicking "DATA IP Setting", it displays the interface as Figure-5 where users can set IP address, submask, gateway and MAC address.

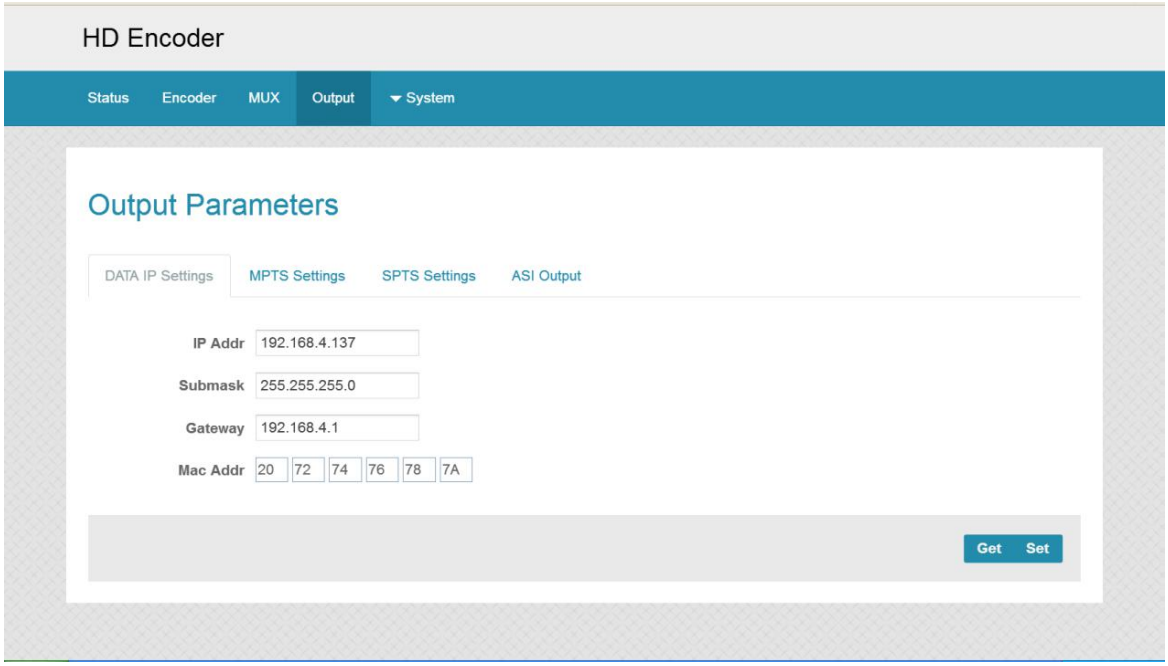


Figure-5

- **MPTS Setting:**

Clicking "MPTS Settings", it displays the interface as Figure-6 where users set MPTS parameters.

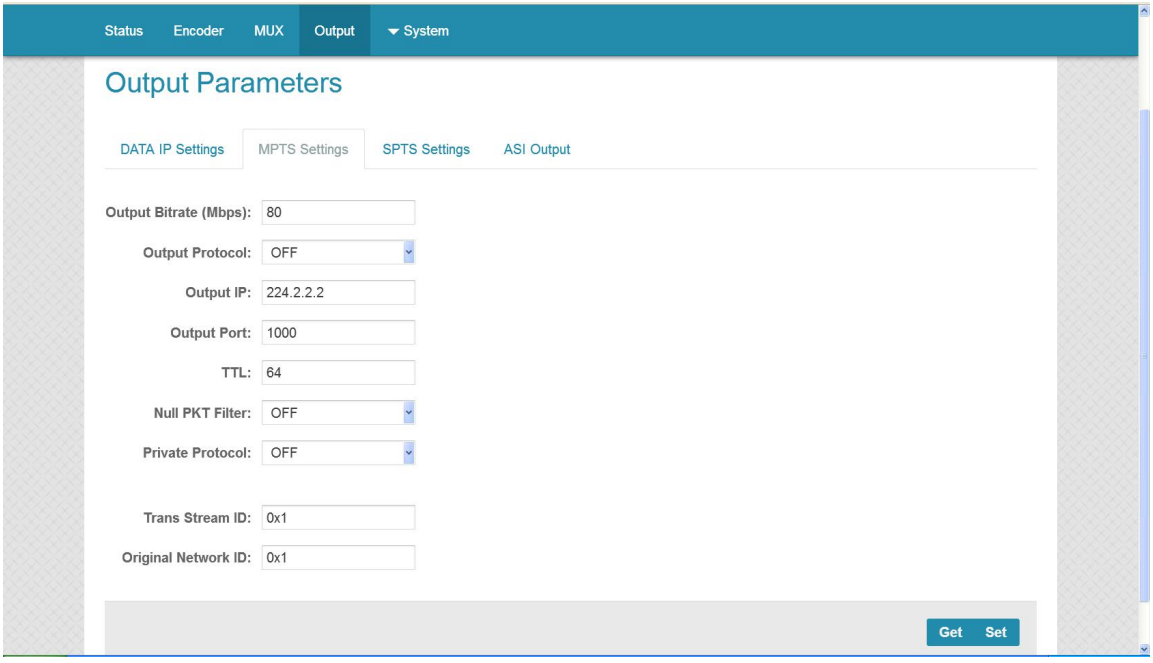


Figure-6

➢ SPTS Settings:

Clicking "SPTS Setting", it displays the interface as Figure-7 where users check and set the SPTS parameters of Encoder1-8.

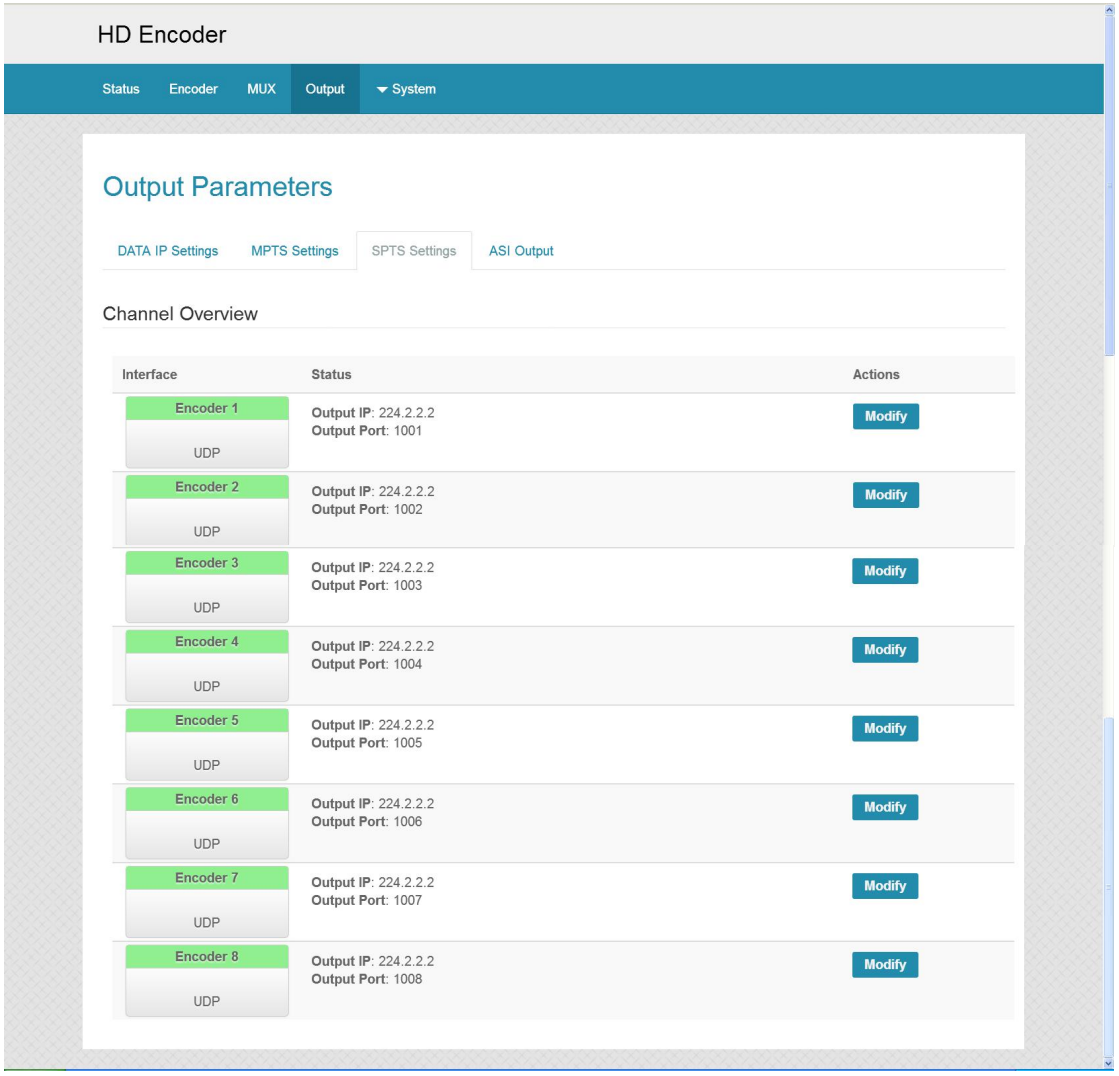


Figure-7

Clicking "Modify", it triggers a dialog box (Figure 8) where users can modify SPTS parameters.

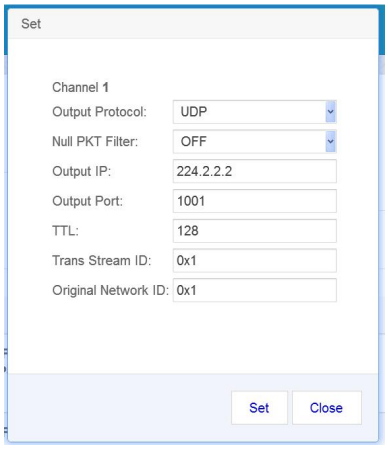


Figure-8

➢ **ASI Output:**

Clicking "ASI Output, it displays the interface as Figure-9 where users select the ASI output stream as mirrior MPTS or SPTS(Encoder1~8).

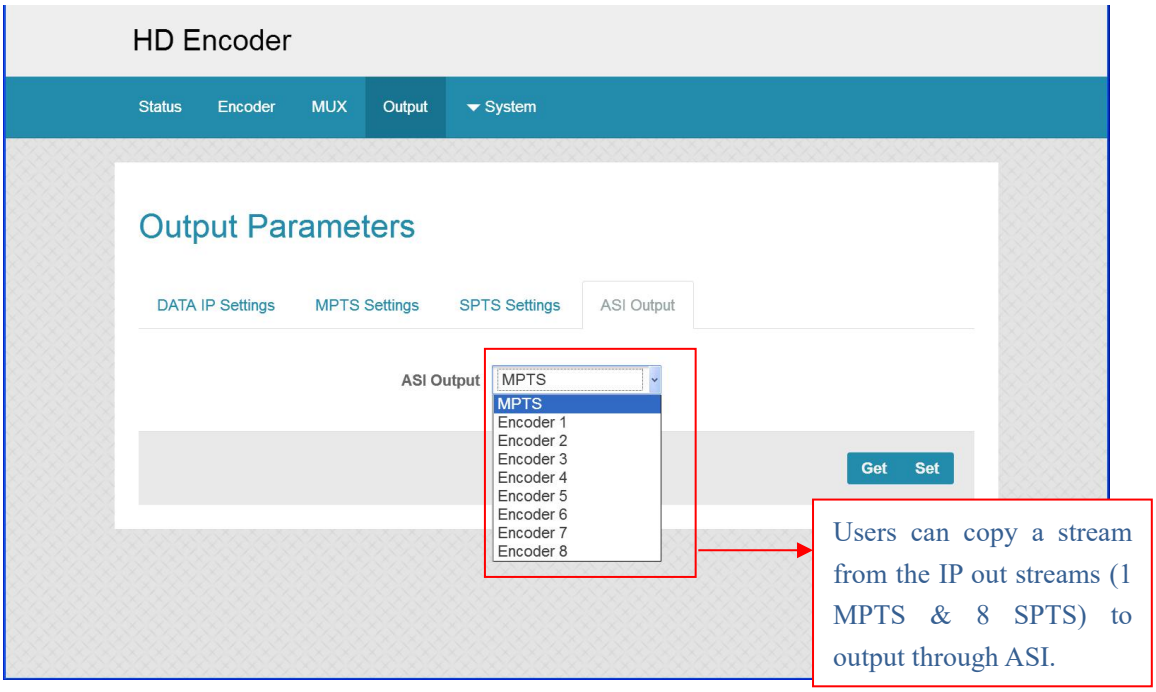


Figure-9

Network:

When user clicks "Network", it displays the screen as Figure-10 about the network information of the device. Here user can change the device network configuration as needed.

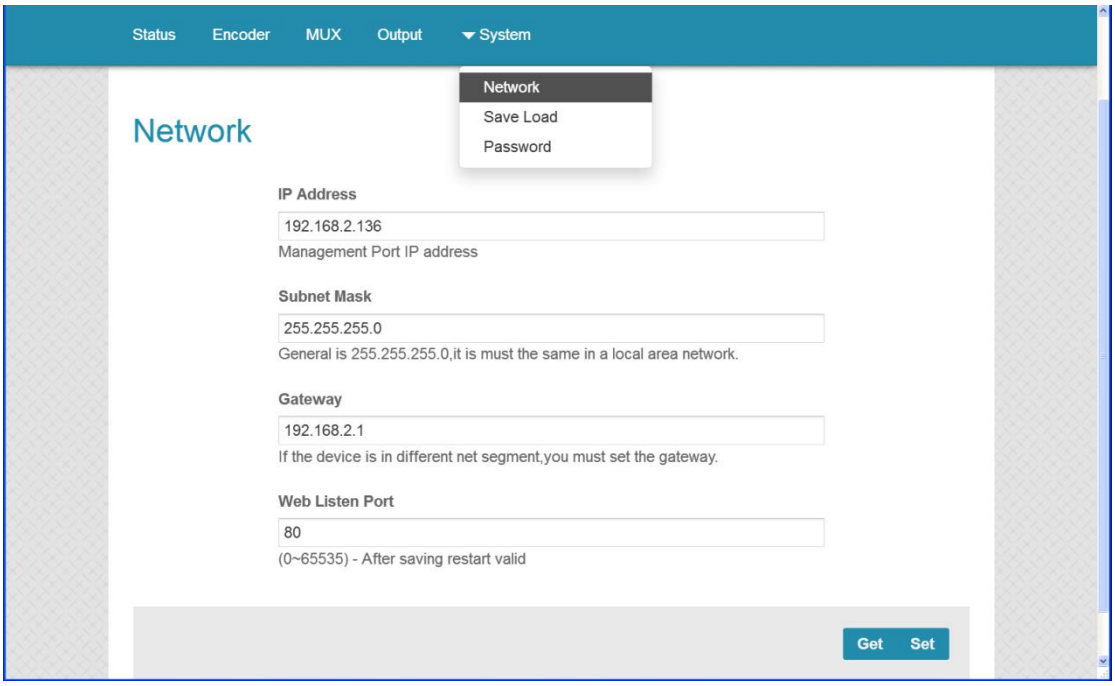


Figure-10

Save Load:

Clicking "Save Load", it will display the screen as Figure-11 where to save or restore your configurations.

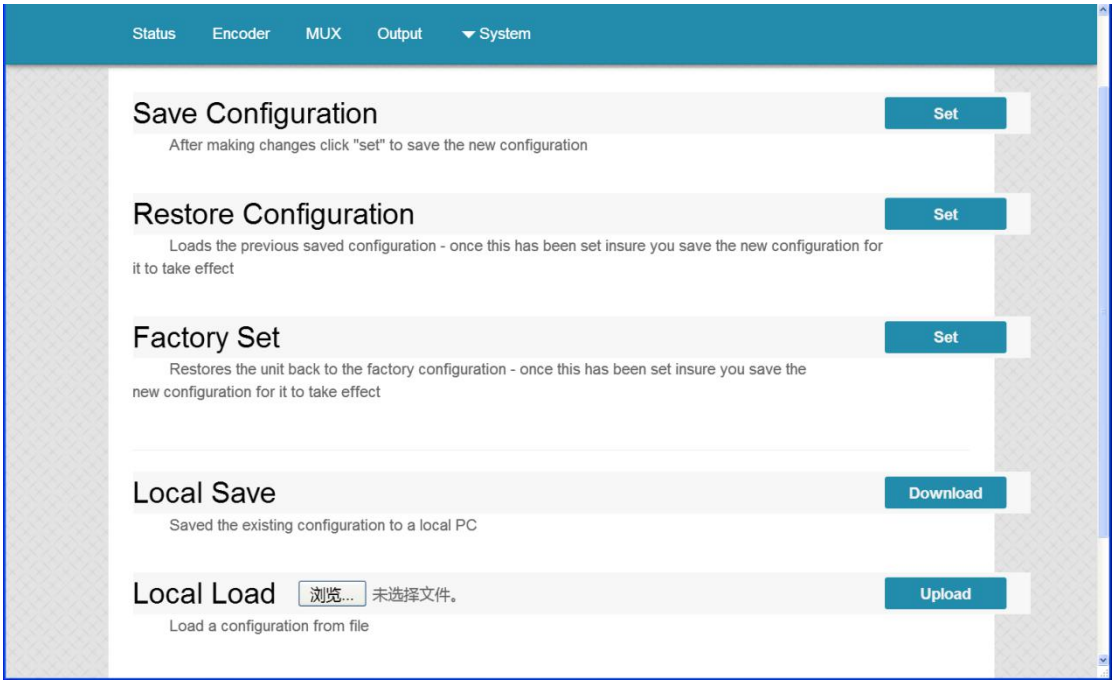


Figure-11

Password

When user clicks "Password", it will display the password screen as Figure-8. Here user can change the Username and Password for login to the device.

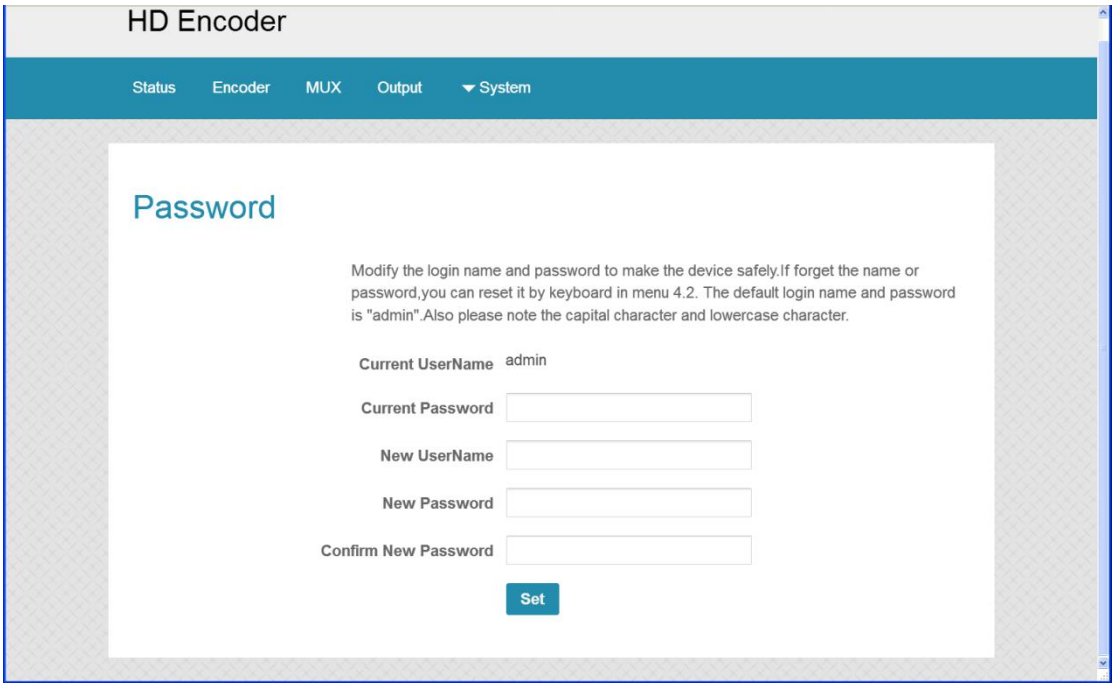


Figure-12

Chapter 5 Troubleshooting

CATCAST's ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All CATCAST products have been passed the testing and inspection before ship out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by CATCAST. To prevent potential hazard, please strictly follow the operation conditions.

Prevention Measure

- Installing the device at the place in which environment temperature between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

Conditions need to unplug power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed

Chapter 6 Packing list

- HP808D 8 in 1 MPEG-4 AVC/H.264 HD Encoder 1pc
- User's manual 1pc
- HDMI/SDI cable 8pcs
- ASI cable 1pc
- Power cord 1pc